TEACHING STATEMENT
Joseph J. LaViola Jr.

Teaching is important to me on many levels. First, helping students learn about computer science is rewarding because I am helping them understand important computer-science concepts and develop problem-solving skills they will use in their careers. Second, teaching is a wonderful way to increase my own knowledge about different areas of computer science. From my teaching experience and also from co-writing the first book on 3D user interfaces, I have seen first hand that the best way to learn something is to try to explain it to someone else. Third, teaching is a way to improve my research. Since some of my research focuses on educational software, the student-teacher dynamic is a very valuable generator of ideas on improving the learning process. In addition, by teaching courses related to my research (especially on the graduate level), I can get students excited about my work and ensure them to contribute not only in course projects but also as advisees on the master’s and Ph.D. level.

Computer science is predominantly a project-based discipline in which students learn most by being active participants rather than merely observers. Thus, I am a firm believer in project-based courses in which students work, both individually and in teams, to apply what they learn in the classroom to realistic scenarios. My philosophy is to use projects extensively in courses I teach. I also believe that, in addition to the knowledge gained from a particular course, students should also take away something more tangible to use and build upon in later courses and research. For example, in the introductory computer graphics course I took at Brown, we had to write a simple vector/matrix library. The assignment was designed to give students an understanding of vector and matrix algebra, but the library was generic enough that I have used it in a variety of other courses since then and in some of my research. I plan to give students assignments and projects similar to the vector/matrix library example whenever possible.

I have taught several one-day courses and tutorials on 3D user interfaces at various conferences, including ACM SIGGRAPH and IEEE Virtual Reality, which I found to be very rewarding. I was a teaching assistant for David Laidlaw’s first Interdisciplinary Scientific Visualization course in the fall of 1999. One of the main goals of this course was to give students experience with working with users from other departments. Having students create visualization applications for scientists with real problems was an invaluable experience. It is important for students to gain this type of experience, since most of them will be designing software with and for others, and I look forward to developing and teaching these types of interdisciplinary courses. I have also given guest lectures on input devices in Introduction to Computer Graphics (an undergraduate course) and on mathematical sketching in Human Factors and User Interface Design (a graduate course). Currently, I am working with Prof. Chad Jenkins on developing a course on Innovating Game Development, to be taught in the spring of 2006, in which students will explore novel technologies for gaming.

I am qualified to teach many different courses at the university level. I would enjoy teaching introductory courses in computer graphics and human-computer interaction as
well as virtual environments and user interface design. I would also like to teach a graduate-level course on 3D user interfaces. I can also teach courses in introductory computer science and programming, discrete mathematics, data structures, software engineering, and any others based on department needs. Finally, I would like to teach a course on numerical methods. Although, such courses are usually taught in mathematics departments, I feel that because numerical methods are so common in many different areas of computer science such as computer graphics, robotics, and simulation, it is important to expose students to these techniques so they can apply them in other classes and in their research.